

What is claimed is:

1. A process for preparing a micro-array for analysis of DNA which comprises the steps of:

5 spotting onto a solid carrier in a predetermined area thereof in which a number of reactive groups are fixed an aqueous solution which contains a thickening agent and probe molecules having a group reactive with  
10 the reactive groups of the carrier to produce covalent bonding, the thickening agent being incorporated in an amount to increase viscosity of the solution to a predetermined value and the probe molecules being selected from the group consisting of nucleic acid fragments,  
15 oligonucleotides and peptide nucleic acids;

spotting onto the solid carrier in an area other than the area in which the aqueous solution was spotted and in which the same reactive groups are present an aqueous solution which contains a thickening agent and  
20 probe molecules having a group reactive with the reactive groups of the carrier to produce covalent bonding, the thickening agent being incorporated in an amount to increase viscosity of the solution to a predetermined value and the probe molecules being selected from the group  
25 consisting of nucleic acid fragments, oligonucleotides and peptide nucleic acids;

incubating the solid carrier having the spotted aqueous solutions on the surface to cause reaction for producing the covalent bondings; and

30 washing the surface of the solid carrier with an aqueous medium to remove the thickening agent from the surface of the solid carrier.

2. The process of claim 1, wherein each of the  
35 aqueous solutions to be spotted onto the solid carrier has a viscosity of 2 to 50 mPa·s.

3. The process of claim 1, wherein the thickening agent is a water-soluble polymer.

5 4. The process of claim 1, wherein the reactive group of the solid carrier is a vinylsulfonyl group and the reactive group of the probe molecule is an amino group.

10 5. The process of claim 4, wherein the vinylsulfonyl group is provided to the solid carrier by reacting a divinylsulfone compound with a amino group which has been previously placed on the solid carrier.

15 6. The process of claim 1, wherein the aqueous medium for washing the solid carrier contains a surface active agent.

20 7. The process of claim 1, wherein each of the aqueous solutions has a viscosity essentially identical to each other.

8. A micro-array for analysis of DNA which is prepared by claim 1.

25 9. A process for preparing a micro-array for analysis of DNA which comprises the steps of:

spotting onto a solid carrier in a predetermined area thereof in which a number of groups electrically chargeable in an aqueous medium are fixed an aqueous solution which contains a thickening agent and probe molecules having a group electrically chargeable in an aqueous medium to produce electrostatic bonding with the electrically chargeable groups of the carrier, the thickening agent being incorporated in an amount to increase viscosity of the solution to a predetermined value and the probe molecules being selected from the group con-

30

35

sisting of nucleic acid fragments, oligonucleotides and peptide nucleic acids;

spotting onto the solid carrier in an area other than the area in which the aqueous solution was spotted and in which the same electrically chargeable groups are present an aqueous solution which contains a thickening agent and probe molecules having a group electrically chargeable in an aqueous medium to produce electrostatic bonding with the electrically chargeable groups of the carrier, the thickening agent being incorporated in an amount to increase viscosity of the solution to a predetermined value and the probe molecules being selected from the group consisting of nucleic acid fragments, oligonucleotides and peptide nucleic acids;

incubating the solid carrier having the spotted aqueous solutions on the surface to cause reaction for producing the covalent bondings; and

washing the surface of the solid carrier with an aqueous medium to remove the thickening agent from the surface of the solid carrier.

10. The process of claim 9, wherein each of the aqueous solutions to be spotted onto the solid carrier has a viscosity of 2 to 50 mPa·s.

11. The process of claim 9, wherein the thickening agent is a water-soluble polymer.

12. The process of claim 9, wherein the electrically chargeable group of the solid carrier is an amino group and the electrically chargeable group of the probe molecule is a phosphoric acid group.

13. The process of claim 12, wherein the amino group is provided to the solid carrier by treating the solid carrier with an aminosilane coupling agent or a

polycation compound.

14. The process of claim 9, wherein the aqueous  
medium for washing the solid carrier contains a surface  
5 active agent.

15. The process of claim 9, wherein each of the  
aqueous solutions has a viscosity essentially identical  
to each other.  
10

16. A micro-array for analysis of DNA which is  
prepared by claim 1.  
15